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PRODUCT LIFECYCLE MANAGEMENT

Product Lifecycle Management accelerates innovations to marketshare by managing a portfolio of products - from concept, design, development, launch, and phase out to achieve maximum market share and lifecycle profitability. In today's internet economy, with short product lifecycles and consequent emphasis on quick time-to-market, companies need to make best use of their resources, while exceeding market and customer expectations.

i2's Product Lifecycle Management (PLM) Solution provides the neccessary tool for companies to leverage the power of the internet; from acquiring customer requirements and feedback through web based survey technologies to collaborative portfolio planning, design optimization and resource scheduling backend operations. i2's PLM solution extends this further to empower the transition process -to allow an optimal product launch and phase out of products, capitalizing on the margins associated with early lifecycle stages and avoiding the obsolescence costs and discounting during phase out.

i2's Product Lifecycle Management (PLM) suite is the only endto-end solution, closely integrated to the supply chain with the most powerful optimization based decision support capability. In particular, it is the only enterprise-level solution that uses advanced planning and optimization methods to support the entire product lifecycle, and the only SW tool that integrates with existing systems in the enterprise. The solution helps maximize the speed, productivity, market-share capture, and financial return of the product development process. The PLM solution is an essential part of i2's well-proven software solution footprint for intelligent eBusiness.

Challenges	RHYTHM PLM Capabilities	
Given multiple project proposals, each with different value, risk and resource needs - which project-funding scheme is optimal?	Extensive scenario evaluation and powerful constraint-based optimization of the total product development portfolio	
How to optimize the development pipeline to maximize output – while avoiding overloading critical resource bottlenecks?	Effective balancing of resource capacity utilization and task priorities and sequencing to maximize overall development throughput, with minimum queue time and delays	
How to reduce product cost while minimizing late design changes and rework?	Cross-functional templates and internet based collaboration embedded in development scheduling and project collaboration solutions.	

Thu, May 11, 2000

#### Solutions

**Product Lifecycle** Management Supply Chain Management Customer Management **Business Process** Intelligence

Strategic Planning



How to select components and suppliers to minimize total supply chain costs and to facilitate effective eBusiness applications? Optimization of component selection and sourcing alternatives integrated with supply chain planning engines and web product configuration logic.

How to fine-tune the product line, including decisions on launch timing, line extensions, and price moves, while responding to competitor actions? Detailed modeling and calculation of net margin per product, market, and account. Rapid product and market scenario simulation and financial reporting to evaluate many possible alternatives

## Value

The value at stake in Product Lifecycle Management is critical to the profitability and top line revenue growth leading to ultimate success for most companies. i2's PLM solution is the only solution in the market that can successfully support the demanding requirements for effective product lifecycle management and optimization. In summary, we believe the key value areas to be:

#### Increased revenue and market share

 Increased throughput by constraint-based planning of the portfolio vs. pipeline capacity.

### Improved product margins

- More effective product launch and phase-out decisions, also respecting design and supply chain constraints
- Ongoing pro-active fine-tuning of pricing, configuration, and timing to maximize market return

### Less wasted development resources

 Focus on most value projects, using consistent facts and assumptions, and swift termination of less successful projects

#### Increased development productivity

- Aligning product development with customer requirements and priorities
- Rapid re-planning based on development priorities, cross-functional dependencies, and resource bottle-necks

#### Reduced product supply and support costs

- More effective design reuse and platform planning based on forward-looking product plans, and sourcing decisions to optimize overall product and supply chain costs
- Integrated design decisions with sales product configuration and pricing systems

#### Faster decision making

- Improved executive visibility of the product portfolio and resource priorities for rapid scenario evaluation and analysis
- Increased velocity by improved scheduling, coordination, by rapid re-planning, and rapid communication by collaborating via the Internet with R&D teams and key partners

### **Differentiators**

- Most complete solution, with integrated workflows linking key phases of the overall product lifecycle, from discovery to commercialization
- Powerful constraint-based optimization with extensive modeling of resources, projects, tasks, constraints, and using various strategic/financial objective functions
- Highly scalable solution featuring memory-resident modeling and calculations to speed up decision-making process to handle large-scale problems
- Real-time collaboration among many functions and organizations over the Internet, using a state-of-the-art security and personalization framework
- Data integration framework linking i2's PLM solutions to existing systems such as: project costing and tracking, human resources, supply chain, and product data management systems

## **Product Lifecycle Management(PLM)Solution**

i2's Product Lifecycle Management solution consists of 2 major components:

- PLM Planning Solutions
- 2. Design Collaboration Solutions

**PLM Planning Solution** consists of several modules that can be combined depending on the specific priorities at each company. The modules span all the major phases in the typical product development and product lifecycle process, from early concept definition, through development and test, launch, to product phase-out. The tools provide support for strategic long-term issues and operational short-term execution. It can be implemented as an integrated solution, or phased in gradually, i.e., linked to introducing new work processes. Specifically the key PLM solution modules are:

- **Portfolio Planner** Significantly increases the value of product development portfolio. Provides improved forward visibility, rapid portfolio optimization and re-planning, integrated risk analysis, accurate evaluation of different development strategies and resource allocation scenarios.
- **Requirements Planner** Reduces time to market for products by focussing the development process on delivering the most valuable customer requirements. Leverages the Internet to collect and listen to true customer requests and product feedback and use this information to prioritize development activities.
- **Development Scheduler** Increases product development velocity reducing overall time-to-market. It supports well-known industry good practices such as Theory of Constraints (TOC), cross-functional coordination, Critical Chain methodology, and

also includes more advanced features such as integrated risk and uncertainty modeling. The solution is based on a proven and highly scalable technology foundation including Genetic

• Startegic Sourcing – Significantly reduces time-to-market and product costs. Leverages design and component reuse, and different sourcing alternatives to optimize the design for lowest overall supply cost. Respects and extends preferred supplier relationships to consolidate procurement to extract component cost and lead time efficiencies. Also integrates with various forms of on-line component information and catalog content.

Algorithm project scheduling.

- Transition Planner Maximizes the yield of the overall product line by increasing product lifecycle margins and market share. Determines the optimal launch and marketing strategy, including pricing, target sales channels, given multiple supply chain constraints and dynamic competitor actions. Facilitates rapid and effective coordination across critical functions to ensure alignment of launch, post-launch, and phase-out activities.
- i2's Design Collaboration Solutions are a collection of Internet-based business capabilities critical to building a highly collaborative and vibrant community for product development professionals. These solutions showcase a highly scalable architecture and a comprehensive security and personalization framework that adapt to the varying needs of each trading partner. Current capabilities include...
- Requirements Collaboration to focus the development plan on high value features as dictated by the top revenue generating customers
- **Project Collaboration** to facilitate globally dispersed design teams & collaboration with key technology vendors
- **Sourcing Collaboration** to achieve optimal BOM structures, improve strategic supplier partnerships, and reduce product cost and product development velocity
- **Design Change Collaboration** to monitor and synchronize cross-functional teams for the execution of ECO's

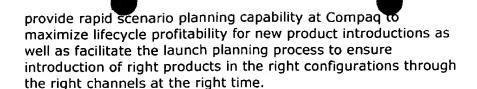
## Marketing Events: 2000

i2's Product Lifecycle Management products will be showcased at the following events:

PLM Executive Conference - Santa Clara Convention Centre, Santa Clara, CA 1:30-5:15 pm; April 25th, 2000. Planet 2000 - Vienna, Austria - May 10-12, 2000 ... News ...

GM goes live with Prototype Manufacturing Scheduling at their Pre-Production Operations Division.

Compaq goes live with i2's Product Lifecycle Management Solution i2 implemented the Product Launch & Transition Planning Solution at Compaq in record time. The system will



# i2 wins Product Lifecycle Management Contract at Ford Motor Corp.

One of the most significant recent roll-outs was Ford's contract to license i2's RHYTHM solution for product lifecycle management. The new system will provide rapid constraint-based planning with enhanced visibility and feedback. i2 also won significant orders from two other large automakers in North America and in Japan.

i2, Aspect & Supplybase in an unprecedented merger in the history of the software industry - to create a B2B marketplace powerhouse with unmatched solution breadth & depth of functionality.

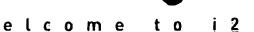
#### Information:

For more information, including **data sheets, whitepapers and the latest PLM Brochure**, please send e-mail to <u>i2's PLM Solution Group</u> or call 1-800-973-1911. We welcome your questions, comments and suggestions.



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read about the new i2 logo!



the leader in supply chain management and intelligent eBusiness

x visit

planet.i2.com

x visit

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> eDay: New York City,

June 15

i2 releases 2nd Quarter Earnings

Q2 revenues increased 57% over prior year Q2, i2's 23rd consecutive record quarter.

<u>i2 releases Intelligent eBusiness solutions</u>
Discover how i2's newest intelligent eBusiness solutions will help eCommerce front-ends fulfill your customer's demands, profitably.

HP and i2 create the first intelligent eBusiness trading community for electronics distributors

Next-generation Portal Leverages E-services and RHYTHM Exchange Services™

RHYTHM Solutions for Mid-Market Companies
Introducing a new competitive advantage for growthoriented companies.

i2 eyes eBusiness

i2 CEO Sanjiv Sidhu talks about the future of eBusiness in Upside magazine.

<u>i2 and IBM forge Supply Chain eBusiness</u> Relationship

Offering combines leading supply chain solutions and e-Business services to deliver increased competitive advantage to customers

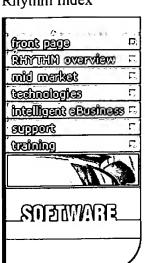
Related stories: News.com | Reuters | Information Week

The Gartner SCM Magic Quadrant: Q2
Read GartnerGroup's latest supply chain market report.



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OVERVIEW: RHYTHM SOLUTIONS

i2's RHYTHM solutions offer the intelligent answer for decision-making across the enterprise. RHYTHM software optimizes and integrates key business processes, while delivering intelligent eBusiness through collaboration with trading partners. RHYTHM offers a complete solution for Business Process Optimization (BPO) by offering the optimization, integration, and forward visibility required for high-velocity business. The RHYTHM solution has delivered billions of dollars in measurable value for major companies in a wide range of industries.

Fri, January 21, 2000

#### Solutions

Product Lifecycle
Management - Driving
Innovation to Marketsh
Supply Chain Managem
Customer Management
InterProcess Planning
Strategic Planning

### the competitive edge

Historically, leading companies have achieved success by mastering one of three core business disciplines:

**product leadership --** developing and launching innovative products at the right time, while managing the product lifecycle from concept to phase-out.

**operational excellence** -- manufacturing and delivering the right products at the right time, while collaborating with trading partners. **customer intimacy** -- engaging the right customers, managing their relationships, and providing superior customer service.

In the past, a company could succeed by pursuing excellence in just one of these areas.

However, the terms of engagement have changed. Globalization, increasing customer demands, intensified competition and the Internet have added incredible variability and complexity to today's busi-ness landscape. *Velocity*, or the ability to make intelligent decisions at high speed, is a necessity in this real-time economy.

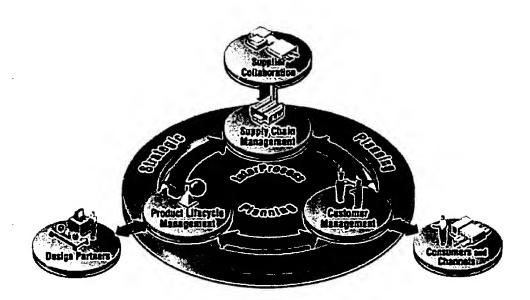
"The increased velocity of information, combined with intelligent use, will differentiate companies into the next millennium."

Larry DeBoever, META Group

What type of decision intelligence will give your company the velocity to achieve excellence in all areas of your business?

The answer is RHYTHM. Representing a natural extension of i2's recognized leadership in optimizing business processes, RHYTHM provides advanced planning and optimization of the following key processes:

- Product Lifecycle Management for product leadership
- Supply Chain Management for operational excellence
- Customer Management for customer intimacy
- <u>InterProcess Planning</u> to integrate the above three processes, maximizing resource utilization and profitability
- <u>Strategic Planning</u> for accurate long-term decision-making and scenario-based analysis of competitors.



In addition, RHYTHM leverages the Internet to intelligently connect your business processes with customers, suppliers and partners to deliver the results you expected from your eBusiness and eCommerce efforts. RHYTHM integrates Web front-end applications with back-end business process optimization.

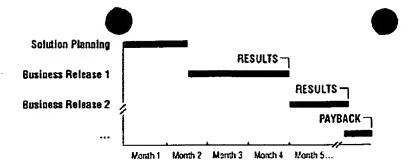
RHYTHM is the end-to-end solution that fully enables Business Process Optimization, or BPO. BPO is a new class of decision-intelligence software that features multi-enterprise optimization and integration, while powering e-business initiatives through intelligent collaboration. What is the difference between BPO and RHYTHM? Simply put, BPO is the concept, while RHYTHM is the solution that makes BPO a reality. In fact, RHYTHM is the first comprehensive suite of software that makes BPO happen.

#### Are your present systems enough?

ERP, legacy and other transaction systems are built for recording what already happened, rather than planning for what will be. This lack of advanced planning capability hinders your company's ability to make the right decisions at the right time. To maximize your investment in ERP and other systems, RHYTHM leverages your current infrastructure. First, RHYTHM derives raw data from ERP systems or any other existing data source. Next, RHYTHM engages an integrated set of planning engines to produce an optimal solution based on a complete view of the enterprise and its trading partners. Last, RHTYHM feeds the optimal solution data back into the transaction system for execution. RHYTHM is the complete decision-intelligence system that turns ERP data into actionable business intelligence.

#### i2 Technologies

i2 Technologies is the recognized leader in Supply Chain Planning and Optimization, with more than ten years of experience in optimizing business processes.



To deliver the full value of business process optimization, RHYTHM features an implementation that is both incremental and value-based. The RHYTHM implementation proceeds step by step, with a focus on components that have the most impact first. As a result, companies see fast, measurable results that pay for the next phase and beyond.

### i2's single mission: value

i2's business model is focused entirely on delivering value to customers. In 1995, i2 raised the bar in the software industry by establishing the goal of providing \$50 billion in value to customers by the year 2005. Even conservative third-party estimates show we are well on our way toward achieving this goal. The latest improvements to RHYTHM make it the complete solution for intelligent eBusiness enabled by BPO, delivering more measurable value for customers than any other business software application. In fact, major companies across industries are already realizing billions of dollars in value through the enhanced RHYTHM solution. We encourage you to discover for yourself the value i2 is generating for customers by reading our "1998 Customer Value Report" on www.i2.com. This unique report, prepared by a third-party auditor, describes the extraordinary return on investment customers are realizing from i2's solutions.

i2's RHYTHM solutions arm companies with a competitive weapon that streamlines operations, boosts customer service, expands market share and enables intelligent eBusiness. If you agree there is a better way of doing business, then we invite your enterprise to achieve maximum velocity with RHYTHM.

"At the end of the day, if you use i2 software and your competitor doesn't, you win."

Barron's, November 1998



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SUPPLY CHAIN MANAGEMENT

The objective of i2's RHYTHM Supply Chain Management (SCM) solution is to achieve operational excellence throughout the extended supply chain by maximizing revenues, minimizing expenses, and making full use of all assets. The result is superior profitability, market share, and responsiveness to customer demand.

The SCM solution, which enables intelligent eBusiness, is the comprehensive integration of all sub-processes that enable the exchange of information and movement of goods between suppliers and end customers, including manufacturers, distributors, retailers, and any other enterprise within the extended supply chain.

SCM is composed of three sub-processes: **Demand Planning**, **Supply Planning**, **and Demand Fulfillment**. SCM is composed of **Demand Planning** for the effective anticipation of market demand, **Supply Planning** for the optimal positioning of enterprise resources to meet demand and **Demand Fulfillment** for the efficient fulfillment of demand as it is realized.

# examples of the problems supply chain management addresses:

The Challenge	The RHYTHM Solution	
How can I improve my responsiveness to supply & demand fluctuations, and minimize inventory?	Intelligent, collaborative workflows that extend the supply chain into the customer and supplier bases.	
How can I improve reliability of my delivery commitments, and maintain my margin targets?	Intelligent, high-performance Available To Promise (ATP) and backlog management.	
How can I reduce the overall inventory levels in my supply chain without sacrificing customer service?	Rapid, end-to-end supply chain planning workflows, with JIT procurement and production.	
How should I set up my global transportation network to ensure efficient delivery and customer service levels?	Complete synchronization between manufacturers, suppliers and logistics providers to ensure maximum asset utilization.	
Is my supply chain positioned to accommodate a new product introduction?	Inter-process integrated workflows for product-transition planning that synchronize the product development and launch capabilities with the supply chain's ability to support the new product.	

Thu, May 11, 2000

#### Solutions

Product Lifecycle
Management
Supply Chain Management
Customer Management

Business Process
Intelligence
Strategic Planning





The RHYTHM Supply Chain Management solution increases profitability and boosts market share through:

- Maximized revenues and minimized costs. . By
  effectively managing constraints and response buffers to
  ensure maximum throughput and demand coverage, the
  resources of an enterprise are aligned to generate
  maximum revenue and eliminate unnecessary costs.
- Improved Customer Satisfaction. Dependable delivery promises and consistent execution against those promises creates customer loyalty.
- Lean Supply Chains. With customer information propagating through to the raw-materials level, there is a need to eliminate unnecessary inventories at any of the intermediate manufacturing, storage, or transportation points.
- Improved Agility. By eliminating unnecessary inventory from the supply chain while ensuring coverage against demand and supply fluctuations, an enterprise can maneuver more effectively against the competition.

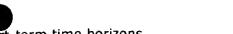
#### **Differentiators**

- Allows front-end eCommerce solutions to directly interact with the company's back-end supply chain processes for intelligent eBusiness.
- Greatest depth and breadth of functionality/optimization, enabling companies to slash costs and respond faster to customer demand than anyone in their industry.
- Fully templatized solutions including best-practice industry-specific process flows for rapid implementation and maximum return-on-investment.
- Technology infrastructure enabling multiple enterprise transaction systems to be integrated with a cohesive planning and optimization layer. RHYTHM leverages the ERP investment, turning ERP data into actionable business intelligence and delivering maximum value.
- Event-based workflows, coupled with real-time planning, providing forward visibility to react quickly to variability and complexity in the marketplace.

## SCM includes the following sub-business processes:

**Demand Fulfillment**—The objective of the demand fulfillment process is to provide fast, accurate, and reliable delivery-date responses to customer orders. Demand Fulfillment is mainly an execution-level sub-process that includes order capturing, customer verification, order promising, backlog management, and order fulfillment.

**Demand Planning**—The objective of the demand planning process is to understand customers' buying patterns and develop aggregate, collaborative forecasts. Demand planning is by definition a planning process which feeds into the supply planning process, and subsequently the demand fulfillment process. Demand planning involves long-term, intermediate-



term and short-term time horizons.

Supply Planning—The objective of the Supply Planning process is to optimally position enterprise resources to meet demand. This is a planning-level sub-process that spans the strategic and tactical supply-planning processes. Long-term planning, inventory planning, distribution planning, collaborative procurement, transportation planning and supply allocation are all part of this sub-process.



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12 files have one or more items; file list includes 551 files. One or more terms were invalid in 102 files.

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6 files have one or more items; file list includes 551 files.

(Item 1 from file: 239) 3/3, K/1DIALOG(R) File 239: Mathsci (c) 2003 American Mathematical Society. All rts. reserv. 02796402 MR 98f#68015 Proceedings of the Fourteenth National Conference on Artificial Intelligence and Ninth Innovative Applications of Artificial Intelligence Conference. Held in Providence, RI, July 27--31, 1997. Publ: AAAI Press, Menlo Park, CA; MIT Press, Cambridge, MA, \*1997\*, xxxii+1092 pp. ISBN: 0-262-51095-2 Language: English Proceedings: Conference on Artificial Intelligence and Innovative Applications of Artificial Intelligence Conference,; Conference: Artificial Intelligence,; Conference: Innovative Applications of Artificial Intelligence,; Providence, RI, 14th National, AAAI-97, and 9th, IAAI-97 14th National, AAAI-97 9th, IAAI-97 1997 Subfile: MR (Mathematical Reviews) Abstract Length: LONG (85 lines) Reviewer: Editors \*1997\*, ...Bart Selman, Problem structure in the presence of perturbations (221--226); Rahul Roy-Chowdhury and \*Mukesh\* \*Dalal\*, Model-theoretic semantics and tractable algorithm for CNF-BCP (227--232); Oliver M. Duschka, Query... (Item 2 from file: 239) 3/3, K/2DIALOG(R) File 239: Mathsci (c) 2003 American Mathematical Society. All rts. reserv. 02399063 MR 93j#68007 AAAI-92. Proceedings, Tenth National Conference on Artificial Intelligence. Held in San Jose, California, July 12--16, 1992. Publ: American Association for Artificial Intelligence, Menlo Park, CA; MIT Press, Cambridge, MA, \*1992\*, xvii+873 pp. ISBN: 0-262-51063-4 Language: English Proceedings: Conference on Artificial Intelligence,; Conference: 10th National, AAAI-92 10th Artificial Intelligence,; San Jose, CA, National, AAAI-92 1992 Subfile: MR (Mathematical Reviews) Abstract Length: LONG (57 lines) Reviewer: Editors \*1992\*, ...S. Nau and V. S. Subrahmanian, On the complexity of domain-independent planning (381--386); \*Mukesh\* \*Dalal\*, Efficient propositional constraint propagation (409--414); Paul Morris, On the density of solutions in equilibrium... 3/3, K/3(Item 1 from file: 345) DIALOG(R)File 345:Inpadoc/Fam.& Legal Stat (c) 2003 EPO. All rts. reserv. 15576693 Basic Patent (No, Kind, Date): CA 2334212 AA 19991209 <No. of Patents: 007> COMPUTER IMPLEMENTED SCHEDULING SYSTEM AND PROCESS USING ABSTRACT LOCAL SEARCH TECHNIQUE (English; French)

Patent Assignee: 12 TECHNOLOGIES INC (US)

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Author (Inventor): WALSER JOACHIM PAUL (DE); DALAL MUKESH (US); CRAWFORD
    JAMES M JR (US)
IPC: *G06F-017/60;
Derwent WPI Acc No: *G 00-087111;
Language of Document: English
Patent Family:
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                Kind Date
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    JP 2002517833
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    US 6456996
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                                                  A 19990604
                   A1 19991209
    WO 9963471
                                   TW 88109389
                                                  A 19990813
    TW 498236
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Priority Data (No, Kind, Date):
    US 88147 P 19980605
    WO 99US12504 W 19990604
    US 325937 A 19990604
Dialog File: Inpadoc/Fam.& Legal Stat_1968-2003/UD=200331
 3/3, K/4
             (Item 2 from file: 345)
DIALOG(R)File 345:Inpadoc/Fam.& Legal Stat
(c) 2003 EPO. All rts. reserv.
11198638
Basic Patent (No, Kind, Date): EP 545090 A2 19930609 <No. of Patents: 004>
  QUERY OPTIMIZATION BY TYPE LATTICES IN OBJECT-ORIENTED LOGIC PROGRAMS AND
      DEDUCTIVE DATABASES (English; French; German)
Patent Assignee: IBM (US)
Author (Inventor): DALAL MUKESH (US); GANGOPADHYAY DIPAYAN (US)
                     (National) DE; FR; GB
Designated States :
IPC: *G06F-009/44;
Derwent WPI Acc No: G 93-183937
Language of Document: English
Patent Family:
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Priority Data (No, Kind, Date):
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Dialog File: Inpadoc/Fam.& Legal Stat 1968-2003/UD=200331
             (Item 1 from file: 348)
 3/3, K/5
DIALOG(R) File 348: EUROPEAN PATENTS
(c) 2003 European Patent Office. All rts. reserv.
01116960
COMPUTER IMPLEMENTED SCHEDULING SYSTEM AND PROCESS USING ABSTRACT LOCAL
    SEARCH TECHNIQUE
RECHNER-IMPLEMENTIERTES
                          PLANUNGSSYSTEM
                                          UND
                                                VERFAHREN MIT ABSTRAKTER
    ORTLICHER SUCHTECHNIK
SYSTEME ET PROCEDE D'ORDONNANCEMENT INFORMATIQUES FAISANT INTERVENIR UNE
    TECHNIQUE ABSTRAITE DE RECHERCHE LOCALE
PATENT ASSIGNEE:
  i2 TECHNOLOGIES, INC., (2129161), Suite 1600, 909 East Las Colinas
   Boulevard, Irving, TX 75039, (US), (Applicant designated States: all)
INVENTOR:
  CRAWFORD, James, M., Jr., 2924 Hugo Court, Flower Mound, TX 75028, (US)
```

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*DALAL*, *Mukesh*, 2508 Timber Ridge Lane, Flower Mound, TX 75208, (US)
  WALSER, Joachim, Paul, 4731 McKinney Avenue#1515, Dallas, TX 75205, (US
LEGAL REPRESENTATIVE:
  Lawrence, John et al (60371), Barker Brettell 138 Hagley Road Edgbaston,
    Birmingham B16 9PW, (GB)
                              EP 1082687 A1 010314 (Basic)
PATENT (CC, No, Kind, Date):
                              WO 9963471
                                          991209
                                                  WO 99US12504 990604
                              EP 99931757 990604;
APPLICATION (CC, No, Date):
PRIORITY (CC, No, Date): US 88147 980605
DESIGNATED STATES: DE; FR; GB
INTERNATIONAL PATENT CLASS: G06F-017/60
NOTE:
  No A-document published by EPO
LANGUAGE (Publication, Procedural, Application): English; English
INVENTOR:
... US)
  *DALAL*, *Mukesh*,
             (Item 2 from file: 348)
 3/3, K/6
DIALOG(R) File 348: EUROPEAN PATENTS
(c) 2003 European Patent Office. All rts. reserv.
00529393
Query optimization by type lattices in object-oriented logic programs and
    deductive databases.
Abfrageoptimierung durch Typgitter in objekt-orientierten Logikprogrammen
    und deduktiven Datenbanken.
Optimation d'interrogation par des treillis de types dans des programmes
    logiques orientes objet et des bases de donnees deductives.
PATENT ASSIGNEE:
  International Business Machines Corporation, (200120), Old Orchard Road,
    Armonk, N.Y. 10504, (US), (applicant designated states: DE;FR;GB)
INVENTOR:
  *Dalal*, *Mukesh*, 9 Farragut Drive, Piscataway, New Jersey 08854, (US)
  Gangopadhyay, Dipayan, 1206 Village Drive, Brewster, New York, (US
LEGAL REPRESENTATIVE:
  Schafer, Wolfgang, Dipl.-Ing. (62021), IBM Deutschland
    Informationssysteme GmbH Patentwesen und Urheberrecht, D-70548
    Stuttgart, (DE)
PATENT (CC, No, Kind, Date): EP 545090 A2
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APPLICATION (CC, No, Date):
                              EP 92118885 921104;
PRIORITY (CC, No, Date): US 801323 911202
DESIGNATED STATES: DE; FR; GB
INTERNATIONAL PATENT CLASS: G06F-009/44;
ABSTRACT WORD COUNT: 181
LANGUAGE (Publication, Procedural, Application): English; English; English
INVENTOR:
  *Dalal*, *Mukesh*,
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           440: Current Contents Search(R) 1990-2003/Aug 08
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            613: PR Newswire 1999-2003/Aug 09
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            620: EIU: Viewswire_2003/Aug 08
            621: Gale Group New Prod. Annou. (R) 1985-2003/Aug 11
            635: Business Dateline(R)_1985-2003/Aug 07
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            637: Journal of Commerce 1986-2003/Aug 11
            647: CMP Computer Fulltext 1988-2003/Jul W2
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648: TV and Radio Transcripts\_1997-2003/Aug W1 649: Gale Group Newswire ASAP(TM)\_2003/Aug 11 136 Processing 660: Federal News Service\_1991-2002/Jul 02 2 674: Computer News Fulltext\_1989-2003/Aug W1 Examined 450 files 704: (Portland) The Oregonian\_1989-2003/Aug 07 1 727: Canadian Newspapers\_1990-2003/Aug 09 Examined 500 files 748: Asia/Pac Bus. Jrnls\_1994-2003/Aug 05 754: IPO Maven 1994-2000/Jul 116 810: Business Wire\_1986-1999/Feb 28 40 813: PR Newswire\_1987-1999/Apr 30 Examined 550 files

58 files have one or more items; file list includes 551 files. One or more terms were invalid in 102 files.

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